

an optical pumping light source for supplying predetermined optical pumping light to said optical amplification section;

an optical filter capable of changing a gradient $dL/d\lambda$ of a loss L (dB) with respect to a wavelength λ (nm) in the predetermined wavelength band to compensate a gradient $dL/d\lambda$ change resulting from the optical amplification section(s); and

control means for controlling an optical pumping light output from said optical pumping light source and adjusting the gradient $dL/d\lambda$ of said optical filter in response to the gradient $dL/d\lambda$ change resulting from the optical amplification section(s) such that light output from said optical amplifier has a predetermined target wavelength characteristics of light power.

14. An optical amplification method of amplifying, at once, multiplexed signal light belonging to a predetermined wavelength band, in which a plurality of signal light components having different wavelengths are multiplexed, comprising the steps of:

guiding the multiplexed signal light to an optical waveguide doped with a fluorescent material together with predetermined optical pumping light and optically amplifying the multiplexed signal light;

guiding at least one of the multiplexed signal light before amplification and that after amplification to an optical filter capable of changing a gradient $dL/d\lambda$ of a loss L (dB) with respect to a wavelength λ (nm) in the predetermined wavelength band and adjusting the gradient $dL/d\lambda$ of the optical filter to compensate change of the wavelength-dependent gradient $dL/d\lambda$ in the optical amplification; and

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 adjusting an intensity of the optical pumping light to adjust light power after amplification such that light output has a predetermined target wavelength characteristics of light power.

29. An optical amplifier for amplifying, at once, multiplexed signal light belonging to a predetermined wavelength band, in which a plurality of signal light components having different wavelengths are multiplexed, comprising:

one or a plurality of optical amplification sections each of which has an optical waveguide doped with a fluorescent material and amplifies the multiplexed signal light by optical pumping of the fluorescent material;

an optical pumping light source for supplying predetermined optical pumping light to said optical amplification section;

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 an optical filter capable of changing a gradient $dL/d\lambda$ of a loss L (dB) with respect to a wavelength λ (nm) in the predetermined wavelength band to compensate a gradient $dL/d\lambda$ change resulting from the optical amplification section(s);

a gain equalizer for compensating for an inherent wavelength-dependent gain of said optical amplification section; and

control means for controlling an optical pumping light output from said optical pumping light source and adjusting the gradient $dL/d\lambda$ of said optical filter in response to a gradient $dL/d\lambda$ change resulting from said optical amplification section(s) such that light output from said optical amplifier has a predetermined target wavelength characteristics of light power.

31. An optical amplification method of amplifying, at once, multiplexed signal light belonging to a predetermined wavelength band, in which a plurality of signal light components having different wavelengths are multiplexed, comprising the steps of:

guiding the multiplexed signal light to an optical waveguide doped with a fluorescent material together with predetermined optical pumping light and optically amplifying the multiplexed signal light;

guiding at least one of the multiplexed signal light before amplification and that after amplification to an optical filter capable of changing a gradient $dL/d\lambda$ of a loss L (dB) with respect to a wavelength λ (nm) in the predetermined wavelength band and adjusting the gradient $dL/d\lambda$ of the optical filter to compensate change of the wavelength-dependent gradient $dL/d\lambda$ in the optical amplification;

reducing an inherent wavelength-dependent gain in the optical amplification using a predetermined gain equalizer; and

adjusting an intensity of the optical pumping light to adjust light power after amplification such that light output obtained by said optical amplification method has a predetermined target wavelength characteristics of light power.

REMARKS

Claims 1 through 31 remain pending. In response to the Office Action, dated October 28, 2002, claims 1, 14, 29 and 31 have been amended. Care has been taken to avoid the introduction of new matter. Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached